

WHAT IS CLAIMED IS:

1. A method of diagnosing squamous metaplasia of bladder cancer in an individual, comprising the steps of:

5 collecting biological samples from said individual; and
 determining the expression of caveolin-1 or keratin 10 in said samples, wherein the expression of caveolin-1 or keratin 10 in said samples indicates the presence of squamous metaplasia of bladder cancer.

10 2. The method of claim 1, wherein expression of caveolin-1 or keratin 10 is determined at protein level.

 3. The method of claim 1, wherein expression of caveolin-1 or keratin 10 is determined at nucleic acid level.

15 4. A method of diagnosing bladder cancer in an individual, comprising the steps of:

 collecting biological samples from said individual; and
 determining in said samples the level of gene expression for a
20 protein selected from the group consisting of zyxin, E-cadherin, moesin, cytokeratin 20, neuropilin 2, p21 and p33ING1, wherein said level of expression correlates with the stage and grade of bladder cancer in said individual.

25 5. The method of claim 4, wherein said gene expression is determined at protein level.

 6. The method of claim 4, wherein said gene expression is determined at nucleic acid level.

30 7. A method of discriminating between superficial and invasive bladder cancer in an individual, comprising the steps of:

collecting biological samples from said individual; and

determining in said samples the level of gene expression for a protein selected from the group consisting of zyxin, E-cadherin, moesin, p21, cytokeratin 20, neuropilin-2 and p33ING1, wherein said protein is differentially expressed in superficial and invasive bladder cancer.

8. The method of claim 7, wherein said gene expression is determined at protein level.

9. The method of claim 5, wherein said gene expression is determined at nucleic acid level.

10. A method of predicting survival outcome of an individual having bladder cancer, comprising the steps of:

collecting biological samples from said individual; and
determining in said samples the level of gene expression for p33ING1 or moesin, wherein said level of expression correlates with survival outcome of said individual.

11. The method of claim 7, wherein said gene expression is determined at protein or nucleic acid level.

12. A method of discriminating between superficial and invasive bladder cancer in an individual, comprising the steps of:

collecting biological samples from said individual; and
determining in said samples the expression of a gene identified by an accession number selected from the group consisting of AA011414, AA021434, AA021464, AA028884, AA034115, AA035095, AA043806, AA074666, AA083385, AA101348, AA127058, AA132065, AA143509, AA147928, AA156863, AA165403, AA172210, AA190401, AA256462, AA279188, AA394148, AA402766, AA421518, AA424578, AA425861, AA430520, AA434068, AA446453, AA447696, AA449831, AA450227,

AA450265, AA454566, AA454862, AA455150, AA455281, AA456136,
 AA457092, AA457162, AA457725, AA458661, AA459663, AA464152,
 AA464192, AA465031, AA465378, AA465593, AA478268, AA485052,
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 5 AA487899, AA489400, AA490047, AA490390, AA496359, AA496784,
 AA496948, AA504128, AA504617, AA598759, AA598815, AA620479,
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 H05769, H17158, H20652, H21040, H23366, H23880, H54093, H73731, H84444,
 10 H93463, H94897, H99502, N30811, N54338, N69283, N73536, N91962, R16165,
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 R78514, T53404, T57815, T67053, T81091, T96829, W49619, W69906, W96107,
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 15 AA404694, AA406603, AA421783, AA424834, AA429399, AA431184,
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 20 AA621335, AA705060, AA708310, H09747, H09818, H10335, H17335, H23277,
 H29292, H41096, H53141, H58736, H65834, H70815, H93463, H95989, N21548,
 N38891, N56882, N58283, N66933, N94428, R08891, R09585, R22271, R28669,
 R36449, R43525, R44132, R51080, R56219, R56432, R60053, R60927, R64066,
 R92455, R94943, R98628, R99918, T50370, T55592, T61792, T68461, T71680,
 25 T86983, T90641, T96711, W31919, W56308, W99364, wherein said gene is
 differentially expressed at the mRNA level in superficial and invasive bladder cancer.

13. A method for identifying the presence or absence of a squamous
 metaplasia of bladder cancer phenotype in a cell or cells, comprising determining the
 30 expression level of caveolin-1 or keratin 10 in said cell or cells, wherein a detectable

expression level of caveolin-1 or keratin 10 in said cell or cells indicates the presence of squamous metaplasia of bladder cancer phenotype and an undetectable level of caveolin-1 or keratin 10 in said cell or cells indicates the absence of squamous metaplasia of bladder cancer phenotype.

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14. A method of identifying the presence or absence of a squamous metaplasia of bladder cancer in an individual, comprising the steps of:

- (a) collecting a biological sample from said individual; and
- (b) determining the expression level of caveolin-1 or keratin 10 in said sample,

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wherein a detectable expression level of caveolin-1 or keratin 10 in said sample indicates the presence of said squamous metaplasia of bladder cancer and an undetectable level of caveolin-1 or keratin 10 in said sample indicates the absence of said squamous metaplasia of bladder cancer.

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15. The method of claim 1 or 2, wherein the expression level is a protein expression level.

16. The method of claim 1 or 2, wherein the expression level is a nucleic acid expression level.

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17. A method of identifying the presence or absence of a bladder cancer in an individual, comprising the steps of:

collecting a biological sample from said individual; and

determining in said sample the level of expression of a protein selected from the group consisting of zyxin, E-cadherin, moesin, cytokeratin 20, neuropilin 2, p21 and p33ING1, wherein said level of expression indicates the presence or absence of a bladder cancer in said individual.

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18. The method of claim 17, further comprising correlating said expression level with the stage and grade of bladder cancer in said individual.

19. The method of claim 17 or 18, wherein expression of said
10 protein is determined at protein level.

20. The method of claim 17 or 18, wherein expression of said protein is determined at nucleic acid level.

15 21. A method of discriminating between a superficial and an invasive bladder cancer in an individual, comprising the steps of:

collecting a biological sample from said individual; and

determining in said sample the level of expression of a protein selected from the group consisting of zyxin, E-cadherin, moesin and p33ING1, wherein said protein
20 is differentially expressed in superficial and invasive bladder cancer.

22. The method of claim 21, wherein said level of expression is a level of expressed protein.

23. The method of claim 21, wherein said level of expression is a level of nucleic acid expression.

24. A method of predicting survival outcome of an individual having bladder cancer, comprising the steps of:
collecting biological samples from said individual; and
determining in said samples the level of expression of p33ING1, wherein said level of expression correlates with survival outcome of said individual.

25. The method of claim 24, wherein expression of said protein is determined at protein or nucleic acid level.

26. A kit for identifying the presence or absence of a squamous metaplasia of bladder cancer phenotype in a cell or cells, comprising a reagent or reagents capable of determining the expression level of caveolin-1 or keratin 10 in said cell or cells, wherein detectable expression levels of caveolin-1 or keratin 10 in said samples indicates the presence of squamous metaplasia of bladder cancer phenotype and undetectable levels of caveolin-1 or keratin 10 in said cell or cells indicates the absence of squamous metaplasia of bladder cancer phenotype.

27. A kit for identifying the presence or absence of bladder cancer in an individual, the kit comprising a reagent or reagents capable of determining the level of expression of a protein selected from the group consisting of zyxin, E-cadherin, moesin, cytokeratin 20, neuropilin 2, p21 and p33ING1.

27. A kit for discriminating between superficial and invasive bladder cancer in an individual, the kit comprising a reagent or reagents capable of determining the level of expression of a protein selected from the group consisting of
5 zyxin, E-cadherin, moesin and p33ING1.

28. A kit for predicting survival outcome of an individual having bladder cancer, the kit comprising a reagent or reagents capable of determining in said samples the level of expression of p33ING1.

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29. The kit according to any one of claims 26-28 wherein at least one reagent is an antibody.

30. The kit according to any one of claims 26-28 wherein at least one
15 reagent is a nucleic acid.

31. The kit according to any one of claims 26-28 further comprising instructions for correlating said level of expression with a clinical diagnosis.